

Application No. 10/628,618

Reply to Office Action

*REMARKS*

Reconsideration of the pending application is respectfully requested in view of the foregoing amendments and the following remarks.

*Summary of the Application*

Claims 1, 2, and 4-29 are currently pending. (Note that the Office Action indicates that claims 1-27 are pending.) In the response, claim 3 is canceled without prejudice, claims 4-11 are withdrawn from consideration, and claims 25-27 are allowed.

The amendments to the claims included in this response are supported throughout the specification and claims as filed, e.g., claim 1 and page 7, lines 1-7. No new matter has been added by way of these amendments.

*Summary of the Office Action*

The Office Action dated August 10, 2005, rejects various claims on two separate grounds. The first rejection is a provisional double patenting rejection of claims 3, 14, 18-20 and 22 based on co-pending Application No. 10/629,242. More specifically, it is asserted that claim 5 of the co-pending application recited the same subject matter as claim 3 of the pending application, claim 15 of the co-pending application recites the same invention recited in claims 14 and 22, and claim 20 of the co-pending application recites the same invention as recited in claims 18-20 of the pending application.

In the second rejection, the Office Action argues that claims 1, 2, 12, 13, 15-17, 21, 28 and 29 are anticipated by Vogel et al. (J. Phys. Chem. 98, pp. 3183-88 (1994) ("Vogel"). Vogel is said to disclose sensitization of nano-porous metal oxide semiconductor such as titanium dioxide, tin oxide, etc. by quantum-sized cadmium sulphate, lead sulfide or antimony sulfide. Because the same metal oxides and chalcogenides are disclosed in both the claims and Vogel, the Office Action concludes that the Vogel metal oxide and chalcogenide would have the same band gap as recited in claim 23.

Further, the Office Action asserts that the dipping of the nano-porous metal disclosed at page 3184 of Vogel is the same method as disclosed in the pending application; the non-porous metal oxide disclosed by Vogel is, therefore, the same as the claimed nano-porous metal oxide that is in-situ spectrally sensitized on the internal and external surface with metal chalcogenide nano particles.

Application No. 10/628,618

Reply to Office Action

Vogel, it is said, further discloses the use of sensitized nano-porous metal oxide as the electrode in an electrolyte containing  $\text{KH}_2\text{PO}_4/\text{K}_2\text{HPO}_4$  at page 3184. As the pending application discloses that the process of adding phosphate to the nano-porous metal oxide is to rinse the metal oxide with an aqueous solution containing a phosphate or phosphoric acid, the nano-porous metal oxide of Vogel is considered to contain the phosphate after the metal oxide immerses in the aqueous electrolyte solution containing the phosphate/phosphoric acid solution.

Finally, it is asserted that Vogel also discloses the use of the semiconductor nano-porous metal oxide as a light converting electrode in an electrochemical cell to generate photocurrent, the abstract and figures clearly indicating that the nano-porous metal oxide is used in a photovoltaic device.

#### *Discussion*

At the outset, Applicants traverse the double patenting rejection on the basis that the claims in the co-pending application are not identical to pending claims 3, 14, 18-20 and 22.

In response, Applicants have canceled claim 3, without prejudice, rendering the rejection of that claim moot. With respect to the remaining claims, applicants request the rejection be held in abeyance until such time as the examiner indicates that pending claims 14, 18-20 and 22 are allowable over the prior art. At such time, Applicants will be amenable to discussing the cancellation of claims in this or the co-pending application, as may be necessary, to address the rejection.

Turning to the prior art rejection, Applicants submit that Vogel does not disclose the subject matter described in claims 1, 2, 12, 13, 15-17, 21, 28 and 29.

At the outset, Applicants dispute that Vogel discloses the use of photovoltaic devices or phosphoric acid. The Vogel disclosure, it appears, measures only photocurrents. This being said, there is a chasm between measuring photocurrents and disclosing a photovoltaic device which simply is not bridged in any manner by Vogel. There being no recognition in the Vogel reference itself of a photovoltaic device, the rejection of claims 12, 13, 15-17 and 21 should be withdrawn. Moreover, Vogel makes no mention at all of using phosphoric acid. Thus, the rejection of claims 28 and 29 should be withdrawn on this basis.

With regard to claims 1 and 2, Vogel fails to disclose, or motivate one skilled in the art, to provide the invention as claimed, including, among other features, the use of certain

Application No. 10/628,618

Reply to Office Action

metal chalcogenides. As novelty exists, and Vogel fails to provide any teaching that would motivate one skilled in the art to use the specific metal chalcogenides in accordance with the subject matter as claimed, Applicants respectfully request withdrawal of the rejection entered against claims 1 and 2.

*Conclusion*

As Applicants believe the application is in proper condition for allowance, the examiner is respectfully requested to pass the application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



---

Christopher T. Griffin, Reg. No. 33,392  
LEYDIG, VOIT & MAYER, LTD.  
Two Prudential Plaza, Suite 4900  
180 North Stetson Avenue  
Chicago, Illinois 60601-6780  
(312) 616-5600 (telephone)  
(312) 616-5700 (facsimile)

Date: October 5, 2005